

1 This listing of claims will replace all prior versions, and listings, of claims
2 in the application:

3
4 Claims 1-9 (Canceled)

5
6 Claim 10 (Currently amended): A circuit comprising:

7 multiple components;

8 a plurality of clock drivers configured to provide separate clock signals to
9 each of the components by way of separate paths; and

10 a phase feedback element corresponding to a pair of components, wherein
11 the phase feedback element is configured to receive and adjust the phase of one of
12 the clock signals, to more closely match the phase of the other of the clock signals;

13 ~~The circuit of claim 1, wherein the phase feedback element corresponding to the~~
14 ~~pair of the components comprises:~~

15 an integrator;

16 a first current source configured to be selectively enabled by the clock
17 signal corresponding to a first of the components of the pair of components, the
18 first current source being further configured to charge the integrator when enabled;
19 and

20 a second current source configured to be selectively enabled by the clock
21 signal corresponding to a second of the components of the pair of components, the
22 second current source being further configured to discharge the integrator when
23 enabled.

1
2 Claim 11 (Currently amended): A circuit comprising:

3 multiple components;

4 a plurality of clock drivers configured to provide separate clock signals to
5 each of the components by way of separate paths; and

6 a phase feedback element corresponding to a pair of components, wherein
7 the phase feedback element is configured to receive and adjust the phase of one of
8 the clock signals, to more closely match the phase of the other of the clock signals;

9 ~~The circuit of claim 1, wherein~~ the phase feedback element comprises:

10 a capacitive element;

11 a first current source configured to be selectively enabled by the clock
12 signal corresponding to a first of the component of the pair of components, the
13 first current source being further configured to charge the capacitive element when
14 enabled; and

15 a second current source configured to be selectively enabled by the clock
16 signal corresponding to a second of the component of the pair of components, the
17 second current source being further configured to discharge the capacitive element
18 when enabled.

19
20 Claim 12 (Original): The circuit of claim 11, wherein at least one of the
21 clock drivers is responsive to a voltage at the capacitive element to adjust the
22 phase of its clock signal.

1 Claim 13 (Original): A circuit comprising:
 2 multiple components;
 3 a plurality of clock drivers configured to provide separate component clock
 4 signals to respectively corresponding components by way of separate paths;
 5 a reference feedback element that receives a reference clock signal and a
 6 clock signal from one of the components, wherein the reference feedback element
 7 is configured to adjust the phase of the clock signal from one of the components,
 8 in response to the reference clock signal and the received clock signal from one of
 9 the components to more closely match the phase of the reference clock signal; and
 10 a phase feedback element corresponding to a pair of components, wherein
 11 the phase feedback element receives clock signals from each component of the
 12 pair and is responsive to the received clock signals to adjust the phase of one of
 13 the clock signals to match the phase of the other of the clock signals; wherein the
 14 clock signals received by the reference feedback element and the phase feedback
 15 element are routed from near the corresponding components.

16
 17 Claim 14 (Original): The circuit of claim 13, wherein the separate paths
 18 have different propagation delays.

19
 20 Claim 15 (Original): The circuit of claim 13, wherein the separate paths
 21 have different lengths.

22
 23 Claim 16 (Original): The circuit of claim 13, wherein the reference
 24 feedback element and the phase feedback element comprise phase comparators.
 25

1 Claim 17 (Currently amended): The circuit of claim 13, wherein:
 2 the reference feedback element and phase feedback elements comprise
 3 phase comparators;
 4 each phase comparator is configured to determine a phase offset; and
 5 the clock drivers are responsive to [[the]]phase offsets to adjust the
 6 [[phases]]of the clock signals of the components.

7
 8 Claim 18 (Original): The circuit of claim 17, wherein the phase offset is
 9 a digital phase offset.

10
 11 Claim 19 (Original): The circuit of claim 13, wherein the phase feedback
 12 element comprises:
 13 an integrator;
 14 a first current source configured to be selectively enabled by the clock
 15 signal corresponding to a first component of the pair of components, the first
 16 current source being further configured to charge the integrator when enabled; and
 17 a second current source configured to be selectively enabled by the clock
 18 signal corresponding to a second component of the pair of components, the second
 19 current source being further configured to discharge the integrator when enabled.

20
 21 Claim 20 (Original): The circuit of claim 13, wherein the phase feedback
 22 element comprises:
 23 a capacitive element;
 24 a first current source configured to be selectively enabled by the clock
 25 signal corresponding to a first component of the pair of components, the first

current source being further configured to charge the capacitive element when enabled; and

a second current source configured to be selectively enabled by the clock signal corresponding to a second component of the pair of components, the second current source being further configured to discharge the capacitive element when enabled.

Claim 21 (Original): The circuit of claim 20, wherein at least one of the clock drivers is responsive to a voltage at the capacitance to adjust the phase of its component clock signal.

Claim 22 (Canceled)

Claim 23 (Currently amended): A circuit comprising:
multiple components;

a plurality of clock drivers configured to provide separate clock signals to corresponding components by way of separate paths; and

a phase comparator corresponding to a pair of components, wherein the phase comparator receives the clock signals from each component of the pair of components and is responsive to the received component clock signals to generate a phase offset; the clock drivers being responsive to phase offsets to synchronize the component clock signals at the components; ~~The circuit of claim 22,~~ wherein a first component of the pair components comprises a first plurality of bit registers arranged in a first sequence and a second component of the pair components comprises a second plurality of bit registers arranged in a second sequence and

wherein the clock drivers provide separate clock signals to each of the bit registers in each of the components of the pair of components via separate paths.

Claim 24 (Original): The circuit of claim 23, wherein the first and second components of the pair of components are located such that a first bit register of the second plurality of bit registers is located adjacent a last bit register of the first plurality of bit registers.

Claim 25 (Original): The circuit of claim 24, wherein the phase comparator receives the clock signals from the first bit register of the second plurality of bit registers and the last bit register of the first plurality of bit registers.

Claim 26 (Original): The circuit of claim 25, wherein the clock signals received by the phase comparator from the first bit register of the second plurality of bit registers and the last bit register of the first plurality of bit registers are routed on paths that are length matched.

Claim 27-34 (Canceled)

Claim 35 (Currently amended): A method of synchronous clocking, comprising:

routing separate clock signals to corresponding components;

comparing phases of clock signals received at a pair of component comprising ~~The method of claim 33, wherein the comparing comprises charging and discharging a capacitive element in response to the clock signals[.]; and~~

1 adjusting the clock signal received at one of the components to match the
2 phase of the clock signal received at the other one of the components.

3
4 Claim 36 (Original): One or more components comprising:

5 means for routing individual clock signals to corresponding components;

6 means for comparing phases of clock signals received at a pair of
7 components;

8 means for adjusting a clock signal from one of the components to match the
9 phase of a reference clock signal; and

10 means for adjusting the clock signal received at one of the components to
11 match the phase of the clock signal received at the other one of the components.